

Surgeon J. J. Woodward U.S.A.
MAURY (R.B.)
with the respect of the Author

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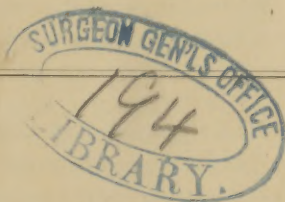
A CLINICAL CONTRIBUTION TO THE STUDY OF THE
FEVERS OF THE MISSISSIPPI VALLEY.

BY

RICHARD B. MAURY, M. D.,

OF MEMPHIS, TENNESSEE.

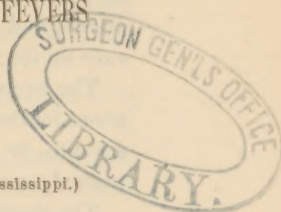
(Read before the Tri-State Medical Society of Tennessee, Arkansas, and Mississippi.)



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By way of introduction to the subject which I propose to discuss in this paper, the attention of the reader is invited to the following description of bilious remittent fever, taken from Wood's *Practice of Medicine*.

"Remittent or bilious fever occurs more or less in almost all parts of the United States, lying between the Northern Lakes and the Gulf of Mexico. . . . The situations in which the disease is most prevalent, are the valleys of streams, the borders of lakes or ponds, the neighbourhood of marshes, and the rich prairies of our Western States. . . . It is, in general, a much more serious disease in the southern and southwestern sections of the United States, than in those portions of the North which are still within the limits of its prevalence. But the disease is not confined to this country; it is endemic almost everywhere in hot climates, and especially where heat, moisture, and decaying vegetable matter act conjointly. . . . It is the disease of whose ravages in the East Indies, Africa, the Mediterranean, and South America, we have heard so much; which has depopulated the Campagna of Rome, and rendered intertropical Africa uninhabitable by whites."

Further quoting and condensing from the same source, we learn that this fever is usually ushered in by a chill. Its characteristic features are headache, backache, and great restlessness; nausea and vomiting of bile; thick, white or yellow coating on the tongue; epigastric tenderness; a yellowish hue of skin and conjunctiva; constipation, and scanty, high-coloured urine. These symptoms are not all present in every case, but they are all so often to be met with that they could not be omitted in an account of the disease.

The first paroxysm of fever is generally followed by a marked remission after twelve or eighteen hours, and each day there may be a distinct remission, or the fever may assume a comparatively continuous form from the start.

If the disease retain a distinct paroxysmal character, it generally runs on, when not interrupted, for two or three weeks or more, terminating at last in a spontaneous solution at the end of one of the paroxysms, or in a regular intermittent, or in a kind of low typhoid affection.

If it approach the continued form, it generally advances to some point of time between the seventh and fifteenth days, when it either declines or ends fatally, or takes on a new character.

When it is to terminate favourably, it either declines slowly from the culminating point, or ends abruptly by profuse sweating, diarrhœa, or diuresis, or changes into the intermittent form.

In not a few cases, instead of following one of the courses above indicated, it takes on, about the ninth or twelfth day, a character resembling enteric fever. Then all regularity in the recurrence of the paroxysms ceases, and a typhoid state ensues. Under these circumstances, the fever runs on for three or four weeks or more.

The average duration of bilious fever in all its forms may be stated at about fourteen or fifteen days. It sometimes ends as early as the fifth or seventh, or about the ninth or eleventh; and is sometimes greatly protracted, even to four weeks or more.

The description given by Flint in his work on "Practice" agrees, in all important particulars, with that which has just been quoted from Wood; and neither of these authors differs materially from Dr. Drake, as he has expressed himself on this subject in "The Diseases of the Interior Valley." After residence, as a physician, for twenty years in the Mississippi Valley, with the amplest opportunities for studying this subject, I can say most positively, that such a disease as that depicted by the eminent authors just quoted, has never fallen under my eye.

Making allowance for the protean forms in which malarial fevers appear, I cannot find in this description a faithful portraiture of bilious remittent. If such a description were true, there could be no rational indications for prognosis or treatment; and it would be impossible to have a clear idea of the course or duration of the disease in any given case.

The field of my observation has been a very varied one—along the river bottoms and in the hills, in civil practice and in military service, from the southern portion of Mississippi to the northern, in West Tennessee and in Southern Alabama—regions in which malarial diseases appear in every possible form, and where the poison manifests its influences in every degree of intensity.

Dr. Wood's description is, I believe, in reality a description of two entirely distinct forms of disease. One of these forms of fever is of short duration, and may, with perfect propriety, be styled bilious remittent, or malarial remittent. In its course and duration it is as well defined, and as distinctly limited, as acute pneumonia or any other fever with which we are acquainted.

The second of these forms of fever is one which may, with equal propriety, be called malarial continued. It also runs a definite course, which, like typhoid, may be divided into stadia. It is self-limited, and cannot be jugulated or shortened by any known means.

Speaking from my own observation, and after conference with very many of my professional brethren in various localities, the malarial fevers which prevail throughout the southern portions of this valley may be classified as—

- I. Malarial Intermittent.
- II. Malarial Remittent.
- III. Malarial Continued.

Since it is quite as impossible to study fevers without a chart of their thermometric range, as it is to compare different routes for the building of a railroad without having before us a profile outline of the surfaces upon which it is to be laid, I shall illustrate the subject to be presented by carefully prepared charts of temperature.

Passing by the discussion of intermittent fever, I proceed at once to the study of

Malarial Remittent.—This is a fever of abrupt invasion, introduced usually by chill, severe headache, and backache. Nausea and bilious vomiting, pain through right hypochondrium, constipation, and scanty urine without albumen, are usually present. Remission occurs in twelve, twenty-four, or forty-eight hours, to be followed soon after by an exacerbation. In early summer, with appropriate treatment, this fever often terminates on the third day; as a rule, it subsides on the fifth day. In the fall, it is occasionally prolonged until the seventh, and in a very few instances I have seen it prolonged to the ninth day. Even without medical treatment, it shows a marked tendency to defervesce on the fifth day, and will often do so completely without the aid of quinia, under the influence of rest, liquid diet, and the cold-water treatment.

Practically, malarial remittent is a fever of five days' duration, and we may, as a rule, confidently predict its termination by that time, under judicious management, in an otherwise healthy subject.

Left entirely to itself, without care or medicine, this fever would probably assume a continued form, the secretions becoming greatly disordered, and the internal organs, chylopoietic viscera especially, being congested, and perhaps inflamed. Upon this point, however, I have no certain information, for the physician, on seeing for the first time a patient who had been long sick, would be perplexed to decide whether the case originally was one of malarial remittent or malarial continued. It would, indeed, be almost impossible to arrive at any conclusion.

CASE I. *Quotidian Remittent.* (Chart 1.)—J. R. E., æt. 21 years. Twenty grains of quinia given during each remission, beginning with the first. Defervescence on third day. Exacerbations occurred at 5 A. M. on first day, at 1 P. M. on second and third days.

At 6 P. M. on fourth and fifth days, there was so severe an attack of intercostal neuralgia, under the right breast, with inability to breathe in the recumbent position, as to necessitate hypodermic morphia. No elevation of temperature accompanied the neuralgic paroxysms. Quinia was given again on the fifth day.

CASE II. *Quotidian Remittent.* (Chart 2.)—J. R. E., the same patient referred to in Case I. Taken sick three weeks after first attack. On fifth day, the temperature rose higher than on any previous day of his illness, though quinia to the extent of 20 grains was given during each remission, beginning with the first.

Defervescence occurred on fifth day. Exacerbations occurred at 4 A. M. on the first, 6 A. M. on the second and third, and 9 A. M. on the fourth and fifth days.

CASE III. *Quotidian Remittent*. (Chart 3.)—F. D., a girl, æt. fourteen years. Quinia was given at the height of the second exacerbation, ten grains at 9, ten grains at 10, and ten grains at 11 A. M., *i. e.*, thirty grains in two hours. Again between midnight and daylight twenty grains. It was repeated to the extent of twenty grains during third and fourth remissions. The fifth exacerbation occurred as usual, and no quinia was given, but, notwithstanding, complete defervescence occurred abruptly.

Chart 1.

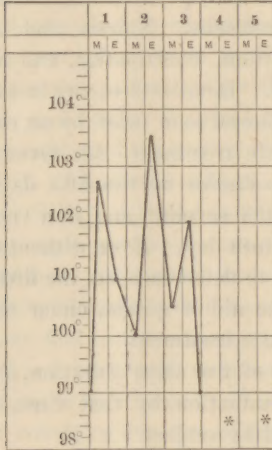


Chart 2.

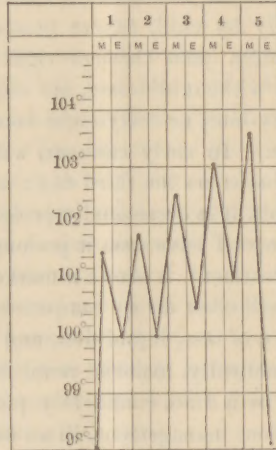


Chart 3.

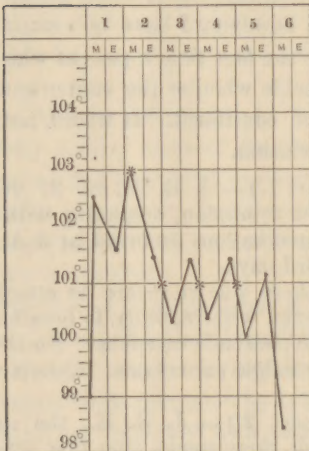
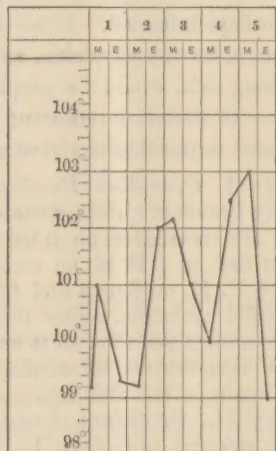


Chart 4.



CASE IV. *Double Tertian Remittent*. (Chart 4.)—E. P., æt. 16 years. First paroxysm at 7 A. M. Exacerbation at 2 P. M. on second day. Repeated on third day at 8 A. M.; on fourth day at 2 P. M.; on fifth day at 9 A. M., after which defervescence was complete. Quinia twenty-four grains was given during each remission.

CASE V. *Pernicious Remittent*. (Chart 5.) — H. M., male, æt. 11 years. Attacked 10th June. Invasion between midnight and daylight. First visit was paid at 5 P. M. of that day. He was attacked very violently with fever, headache, backache, extreme restlessness, and uncontrollable vomiting, at first of bile and afterwards watery mucus. Irritability of stomach continued until subsidence of the fever on the fifth day, to such an extent, that even the smallest quantity of milk with lime-water was rejected. No perceptible remission occurred until the third day. Defervescence was sudden and complete on fifth day. No quinia was given, and no medicine of any kind, except three grains of calomel, which were administered before I saw him. This acted upon the bowels several times. The cold water treatment was vigorously and unremittingly used, by means of sponging the surface with iced whiskey, and compresses wrung out of ice-water, covering the front and back of the trunk. During this attack the pulse ranged from 120 to 150. Delirium was constant. Convalescence was rapid.

Chart 5.

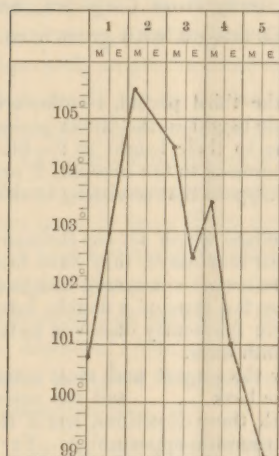
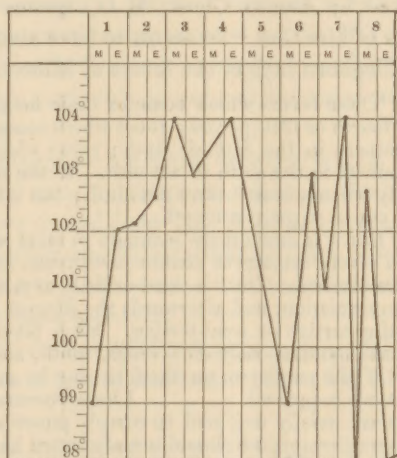


Chart 6.



CASE VI. *Quotidian Remittent of eight days' Duration*. (Chart 6.) — B. H., æt. 2 years, a delicate nervous girl. Nausea and great restlessness marked the invasion. Quinia eight grains was given at 12 M. on third day. This was in part rejected. Quinia sixteen grains was given by enema at 11 P. M. on the fourth, but was in part rejected. It was repeated with same result, on the fifth night. Soon afterwards, nine grains were given by the mouth and retained. At 11 P. M. on the sixth ten grains of quinia were given by mouth. The cold water treatment was used as in the last case.

Two features in this case should be noted: First, the complete intermission which occurred at the close of the fifth day, though quinia had been given so unsatisfactorily and ineffectively. Second, the abrupt termination of the fever at the close of the eighth day, the thermometer sinking at midnight to 96°, and the pulse falling to 80, being very feeble and irregular, and requiring the administration of brandy and broth, and the

rubbing of the body with dry mustard. No medicine of any kind had been administered since 11 P. M. on sixth day.

These cases have been selected from my records, as illustrating the natural tendency of this fever, when aided by appropriate treatment, to terminate by crisis on the fifth day. I might multiply them without number, if it were necessary.

Such was the rule with the fevers of lower Mississippi. Such has been the rule with those of West Tennessee. Very rarely have I found them running to the seventh and ninth days. This fever affords a complete illustration of the ancient doctrine in regard to critical days. After having observed these features of remittent fever in Mississippi, I met with Cleghorn's little book on the "Epidemical Diseases of Minorca," as observed by him from 1744 to 1749, edited by Dr. Benjamin Rush, of Philadelphia, in 1809.

Dr. Elisha Bartlett, in his work on the "Fevers of the United States," edited by Alonzo Clark, M.D., quotes very freely from Cleghorn, and says of him that "he seems to have studied this subject with great care."

Cleghorn says of the fevers of Minorca—

"Those fevers which come to their height in the third period, terminate in the fourth or fifth period; those which come to their height in the fourth period, terminate in the fifth or sixth; those which come to their height in the fifth, terminate in the sixth or seventh. If the fever increases to the seventh, it probably will not cease before the ninth; but it rarely happens that remitting tertians run out to so great a length.

"But it is much more common to meet with tertians which set out furiously, with severe subintractant double paroxysms, so that for some days, they have little or no interval. On the third or fifth day, a profuse sweat commonly brings on an intermission, and afterwards the disease assumes the type of a double intermitting tertian or semi-tertian. Such fevers I have frequently observed to terminate spontaneously on seventh, ninth, and eleventh days.

"If the paroxysm on the fifth day be evidently the longest and most severe that has happened . . . I have recourse to the bark . . . and the assistants are strictly enjoined to comply punctually with these directions, lest if this interval escape, we should not afterward have a favourable opportunity. Yet it is not always in our power to put an immediate stop to the fever by this means. On the contrary, do what we can, it will often proceed in its career, and, in spite of all our attempts, run obstinately on to the seventh or ninth day."

These are the observations of a careful and accurate observer, made before the days of quinia and cold-water treatment, when the physician's main reliance was in the use of evacuant medicines, and bark tardily administered.

Prof. W. C. McLean of the Army Medical School at Netley, who wrote the article on Remittent Fever for Reynolds's "System of Medicine," after an extensive experience in India, says—

"As soon as the second remission appears, quinine must be given as before, and continued until full saturation of the system is evidenced by cinchonism. So soon as this state is brought about, in a vast majority of instances, the exacerbations will become milder and terminate in a copious sweat, and the patient will enter on a state of convalescence."

Leaving us to infer that defervescence will occur in a few days, he further

adds, that this fever has a duration of from five to fourteen days, and that like all forms of miasmatic fevers its duration is much affected by treatment, and the action of antiperiodic remedies. Dr. McLean clearly indicates in his article, that this is a fever of short duration, and one which he expects to terminate, in all its forms, quite speedily by the vigorous use of antiperiodics, no matter at what period in its course he is called to see it.

Dr. Aitken ("Science and Practice of Medicine"), whose material is also gathered from Indian observations, states that—

"when the disease does not terminate fatally, amendment is generally observed after the fifth exacerbation, which may subside in very copious perspiration." And again, while discussing treatment, "by these measures the daily decline of the disease is seen, and consequently there is a daily diminishing occasion for the use of active measures of cure, till towards the fifth, sixth, or ninth day, convalescence is established."

In view of the observations here presented, it would then seem eminently proper, in defining bilious remittent fever, to say that it is a disease having a natural tendency to defervescence on or about the fifth day; that with proper treatment it can sometimes be terminated on the third day, nearly always on the fifth day, and only in exceptional cases will it last until the seventh or ninth day.

The great importance of recognizing such a definition clinically is, that the physician may have a definite aim in treatment, which I submit he can scarcely have if the description quoted from Dr. Wood is correct.

I now approach the study of another and entirely distinct form of fever, due likewise, in all probability, to the influence of the malarial poison, whatever that may be. This has been called—

Malarial Continued.—All the writers with whom I am acquainted seem to regard this fever as a form of bilious remittent. Thus Dr. Elisha Bartlett says—

"In the warmer malarious regions, and during the prevalence of the graver forms of periodical fever, the bilious remittent variety, especially, frequently loses to a great extent its periodical or remittent character, and assumes more or less entirely a continued form."

Cases of this kind are by others referred to as "neglected remittents," and as "remittents with adynamic tendencies;" and for several years past, as far as I can learn, this is the form of fever denominated in the mortality reports of this city "typho-malarial."

Its invasion, instead of being abrupt, as is the case with remittent, is sometimes marked by prodromes. In many cases, the patient has been ailing for a week before going to bed. In other instances he will have had a repetition of chills for two or more weeks, at irregular intervals, when finally the fever which follows the chill assumes a continued form, and goes on rising gradually, day by day, until on the sixth or seventh day, when the temperature has reached $103\frac{1}{2}^{\circ}$ or 104° . In other cases there are no premonitory symptoms. The patient is attacked in the

midst of apparent health, without appreciable cause, having had no previous manifestation of malaria.

This fever presents a stadium of increase of about one week, a stadium of height of five or six days, and a stadium of decrease, which terminates completely on the twenty-first day.

Its thermometric range is decidedly lower than that of typhoid. It seldom goes above $103\frac{1}{2}^{\circ}$. Vomiting of bile is quite a common symptom during the first days of the attack. Bronchial catarrh is generally present. Constipation and a concave abdomen are marked features.

Appreciable splenic tenderness or enlargement has been so rare in my observation, that from memory I can recall but two cases in fifteen years.

All the essential features of typhoid or enteric fever are absent. There is no diarrhoea, no ileo-cæcal tenderness or gurgling, no meteorism, no eruption of rose-coloured spots. As a rule, there is entire absence of abdominal symptoms.

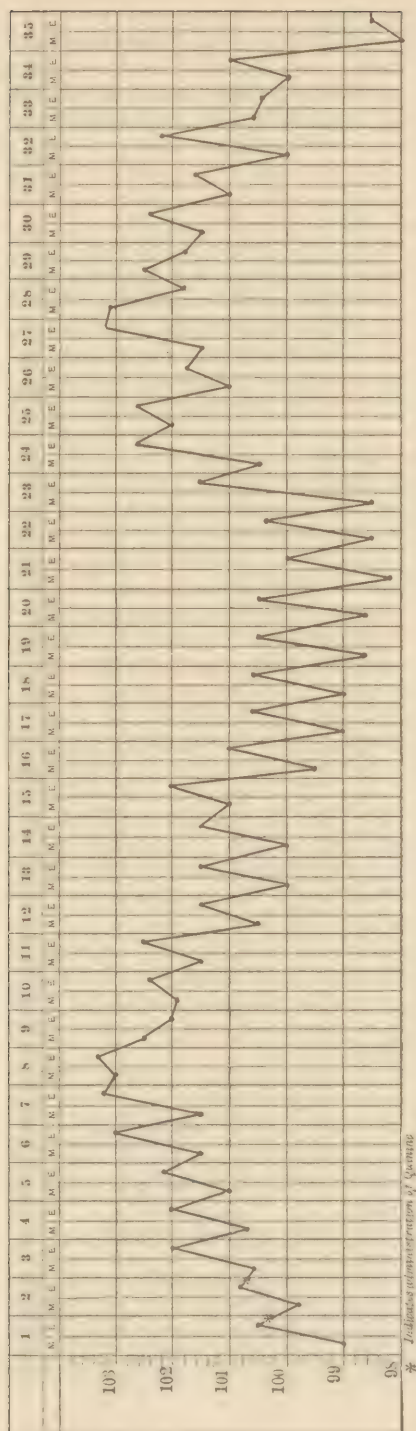
In some instances where the patient's previous condition was bad, perhaps the system undermined by malaria, and where he was unfavourably situated for treatment, or had had no treatment, I have seen diarrhoea, dry, red, and shining tongue, sordes and low delirium with picking at the bedclothes, and a condition closely resembling typhoid.

There were a few such cases among the soldiers of the 28th Miss. Reg't Cavalry, encamped in the Mississippi bottom in the summer of 1862. Their health had been shattered by repeated attacks of intermittent and remittent fevers; and they were located where there were lacking all the essentials for the proper treatment of continued fever, but where there was no suspicion of the existence of the poison of genuine typhoid.

In quite a large proportion of the cases of this fever, a prominent feature is neuralgia. It will come on about mid-day, and continue until after midnight; and in some instances so severely, as to demand the hypodermic use of morphia. In one case, the pain will be supra-orbital, and extend to the side of the face, neck, and shoulder. In another, the neuralgia attacks the intercostal nerves of one or both sides so severely, that there is dyspnoea from inability to expand the chest. In a third, I have seen this pain localized in the right side, over the region of the ascending colon, extending therefrom upwards into the chest and downwards to the hip. In a fourth, it is in the abdomen. These neuralgias are periodical, coming on in the forenoon, increasing in severity during the afternoon, and disappearing about midnight. They constitute a very troublesome and distressing feature in many of the cases of malarial continued. The following records will serve to illustrate the fever under discussion.

CASE VII. *Malarial Continued Fever.* (Chart 7.)—Mrs. —, æt. 35 years, a delicate lady, after suffering from prodromata went to bed with fever on 12th of May. That night, between midnight and daylight, twenty-eight grains of quinia were given; and the second night, at the same hours

Chart 7.



twenty-four grains. The bowels were moved by castor oil. As the quinia did not check the progress of the fever, but disordered the stomach, which was already weak and irritable, it was not again repeated. Attention was given to securing proper action of the skin and kidneys, by sponging the surface regularly and systematically with whiskey at a temperature varying according to the bodily temperature. If this did not go above $101\frac{1}{2}$, whiskey alone was used; if it reached or rose above 102° , whiskey with ice in sufficient quantity to reduce it. As to food, buttermilk was used almost exclusively, and was given every three hours. Two or three times a day, chicken-water or beef essence was substituted. No stimulants were given, because not believed to be required. The bowels were constipated, the abdomen concave. There was no ileo-caecal tenderness or gurgling. Enemata of warm water were used every few days, to move the bowels. The secretion of the kidneys was very scant, only about six ounces in twenty-four hours a great portion of the time. It contained no sediment. No albumen was at any time found. The patient's capacity for food and drink was exceedingly small. As the fever rose in the evening, gastric uneasiness with nausea increased; and after 10 P. M., it was impossible to feed her at all, until daylight came again.

About the 16th day, as the fever lowered a little, her willingness to take food increased. Up to this date, she had taken it under protest. By the 21st day she had some appetite, and her temperature fell to 98° on this day. In her eagerness to replenish her shattered strength, she, on the 22d, imprudently ate of solid food, and in large quantity for her. She began to suffer after this from headache and anorexia, and next day the temperature rose, going higher and higher until the 27th day. From this, there was a gradual decline until the 33th day, when it again became natural. After the administration of quinia on first and second days of the fever, no medication was attempted. Towards the close of the attack, the bowels were allowed to go unmoved for six days, because no discomfort was occasioned by them. They were then moved by enema.

A glance at the fever chart in this case shows that there were really two fevers, one of twenty-one, another of fourteen days. The second was clearly a relapse occasioned by imprudent eating, and this, I am sure from multiplied observations, is the explanation of the continuance of many of these cases beyond the 21st day.

The maximum pulse beat in this case was 98; the minimum 84 per minute. Observations of temperature were taken every two hours during the attack.

No attempt to give quinia was made after the second day, because it acted as a disturbing element, and from previous observations I was satisfied it would accomplish no good.

CASE VIII. Malarial Continued Fever. (Chart 8.)—H. P., *et.* 5 years, had been absent from Memphis all summer in a healthy country. Returned in unusually good health. Was attacked with fever on evening of Nov. 27th, about three days after his return home. He was seen by me at midnight; had had no chill, but temperature was then 100° . A dose of castor oil was ordered.

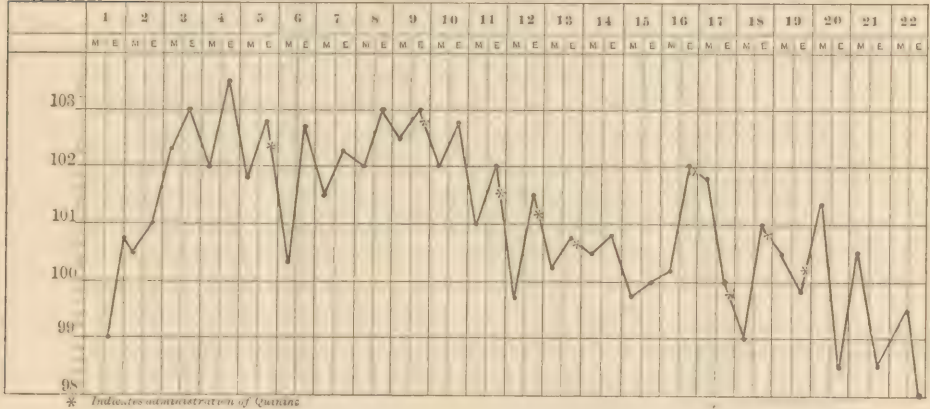
2d day. Gave several small doses of calomel and Dover's powder, and tr. aconit. gtt. ij, every two hours.

3d day. Much cough, pulse 150, temperature 103° . Discontinued the aconite and gave tr. verat. virid. gtt. iij, with squill every two hours. This nauseated and sweated him, but did not reduce pulse or temperature.

4th day. In morning ordered oil silk jacket to the chest, because cough

was troublesome, and pulmonary inflammation was feared. The temperature reached $103\frac{1}{2}^{\circ}$ early in the afternoon, the jacket was in consequence removed, and sponging with iced whiskey used instead. This sponging was made use of on the fifth, sixth, seventh, and eighth days every hour or two, whenever the temperature rose above 102° . But for this treatment it was evident that the thermometer would have gone higher than indicated by the chart.

Chart 8.



On 5th day, at 8 P. M. ten grs. quinia and four drops of liquid Dover's powder were given in one dose. This was repeated at same hour daily, from the ninth to the nineteenth day. During this fever, every function was to all appearance well performed.

The bowels acted spontaneously most of the time. Oil was required twice; occasionally an enema. The kidneys acted freely and regularly, and the urine appeared natural and was free from albumen. The tongue was soft and moist with a light white fur. Bronchial irritation was troublesome, but repeated examination proved the absence of pulmonary inflammation. The cough was harassing in proportion as the temperature rose, and was always lessened by the application of iced compresses to the chest and abdomen.

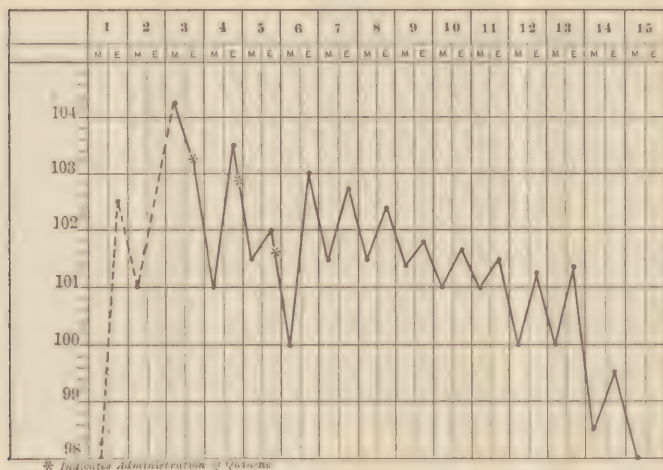
Diet was exclusively milk and lime-water, given every two hours during the day, and three hours at night. Sponging was used hourly when the temperature was above 102° .

There were no abdominal or brain symptoms and no eruption. There was no indication of a local lesion.

CASE IX. *Malarial Continued Fever.* (Chart 9.)—H. H., an active man, *et.* 30 years. Had not felt well for several weeks; was taken with fever on evening of 25th November; had fever all next day and night, and came to my office in forenoon of 27th November, where I found his temperature $104\frac{1}{2}^{\circ}$ —probably raised by exercise, as he had been attending to business for several hours before. Between noon and midnight he took thirty-two grains of quinia, and on morning of 28th of November his temperature was 101° . At 6 P. M. it rose to $103\frac{1}{2}^{\circ}$. At midnight he took twenty-four grains of quinia, which was repeated next night at same hour.

As he suffered greatly from muscular pains in cervical spinal region and in the arms and chest, so that it was painful to take a satisfactory inspiration, ten grains of quinia daily were given about 8 A. M. for several days, and with marked relief. These pains, which were regarded as spinal symptoms, increased with the rise of fever in the afternoon. No calomel was given. Castor oil was used at first, and on two subsequent occasions the

Chart 9.



bowels were moved with citrate of magnesia. His diet was milk or buttermilk. Urine nearly normal; no albumen. Complete defervescence occurred on fourteenth day, when the temperature was $98\frac{1}{2}^{\circ}$ in morning and $99\frac{1}{2}^{\circ}$ in evening. The pulse ranged from 74 to 96. The cold-water treatment was systematically used.

Remarks.—I am well satisfied that this fever is not the result of neglected remittents, as some have intimated. It begins, continues, and ends as a continued fever. Its duration is in no way affected by the exhibition of antiperiodic remedies.

The “status typhosus” is not one of its characteristics; when it occurs, it is exceptional, and is due to the operation of causes extraneous. The abdominal symptoms are absent, hence there would seem to be no relationship to typhoid.

While typhus is purely contagious, and typhoid is a miasmatic contagious disease (Liebermeister), this fever is neither, but has a different etiology.

I must here refer to two cases of this fever in which grave cerebro-spinal symptoms supervened upon crisis, a circumstance which has been noted in the other forms of continued fever.

In one of these, a boy of 12 years, whose attack had been of very moderate severity, complete defervescence occurred on the 21st day. On the evening of the 22d day, there was a convulsion followed by stupor. The next day another convulsion, with hemiplegia. Stupor continued, and death occurred on the 5th day.

The second case was that of a boy of 14 years. Fever left him on 21st day. At night there supervened paralysis of the left arm and leg, but the cerebral functions were not disturbed. In a few weeks these symptoms disappeared, and convalescence progressed favourably; but within a year true epilepsy appeared, and has continued to the present time, after the lapse of ten years.

The supervention of cerebro-spinal lesions as immediate consequences of crisis in typhus and typhoid fevers, is discussed by Hudson in his work on "Fevers."

I regret that, in the fatal cases of malarial continued fever which have occurred in my practice, it has been impossible to obtain an autopsy. A better knowledge of its pathology is much to be desired.

Though familiar with typhoid fever from my service in the wards of Bellevue Hospital, under the guidance and teaching of Drs. Clark, Metcalfe, and McCready, I have never recognized it in this valley until the past summer; and this observation is in accordance with the oft-expressed views of medical acquaintances, if I except an occasional case clearly due to importation.

In June last, a boy of 6 years was under my care for what I considered typhoid fever. He recovered, the fever having lasted twenty-nine days.

A second case occurred soon after, having no connection with the first. This patient, a young woman 26 years of age, had lived some years in Hickman, Ky., and having chills there, had acquired a large spleen. She was in good health when attacked in Memphis, where she had been living for more than a year. She had fever eighty-one days, and died on the ninety-second day of her illness. The case was carefully studied, and records of temperature and pulse kept throughout. The features most prominent in her history were fever, bronchitis, greatly enlarged, very tender, painful and hard spleen, diarrhoea, and swollen belly. There was no eruption, no intestinal hemorrhage. Death from exhaustion.

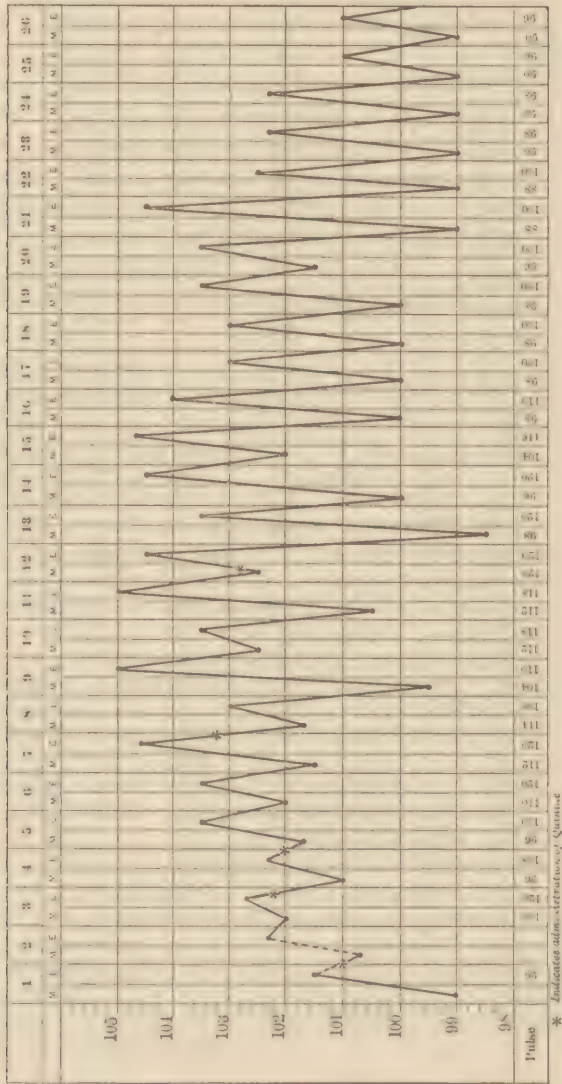
At the autopsy, round and oval-shaped ulcerations were found in lower part of small intestine. In two of these the healing process was clearly established, for around the circumference of these ulcers the mucous membrane was adherent to the muscular coat. A third ulcer was situated on the upper end of an oval Peyer's patch. The peritoneal coat of the ileum was much injected. There was no peritonitis. The mesenteric glands were decidedly and uniformly enlarged.

The liver was denser than normal; was of a yellow colour, rather larger than natural, had no abscesses, and was adherent by old lymph to the diaphragm. The spleen was enlarged, hard, very dark red, with no purulent deposits. Gall-bladder contained seventeen small calculi, which had given rise to no known symptoms during life. There were evidences of old pelvic peritonitis. Kidneys were not examined. Dr. Albert Sessel, of New York, saw and examined the piece of intestine removed at the autopsy, and concurred with me that the lesions were those of typhoid fever.

This case established the fact that typhoid fever existed here. Other cases soon appeared, and one of these is presented to show how regularly typhoid may pursue its course, undisturbed though surrounded by malaria.

CASE X. *Typhoid Fever*. (Chart 10.)—Miss —, at. 29 years, a resident of Paducah, went to bed on the 22d September. She had spent the month of July at Gibson's Wells, in West Tennessee, and came from there to Memphis on 15th August. The records of temperature were taken every two hours, night and day; of respiration and pulse night and morning. The accompanying chart records the maximum and minimum

Chart 10.



temperature daily, and not simply morning and evening temperatures. The fall of temperature on ninth day was probably due to action of calomel given the night before and that morning, in doses of six grains, aided by the

influence of quinia given, in a single dose of twenty-four grains, on the night of the seventh day.

The great fall of temperature on the thirteenth day seemed due to salicylate of soda, fifteen grains every two hours during the day, from 10 A. M. to 10 P. M.; in all one hundred and five grains.

During the entire course of the disease, the temperature day and night was controlled by sponging with ice-water, or the application of cold compresses, whenever the thermometer reached 102° or over. There were present mental weakness and dulness, deafness, and quiet delirium, and during the first week, severe headache; moderate but marked and persistent diarrhœa, with involuntary discharges from the bowels; tympanites, gurgling, and great tenderness on pressure over the ileo-cæcal region.

The urine in the beginning was scant and high-coloured, but increased under the free use of Apollinaris water. During the second week the use of the catheter was necessary. At the close of the second week the urine was albuminous, with a specific gravity of 1020. Under the microscope, there were numerous renal cells, the nucleus in some distinct, but in others not visible, the cells being filled with yellow granular matter. There were also cylindrical masses of granular matter. No tube casts. After twenty-first day, for two weeks, there was deposit of urates on standing. Although, as indicated by the chart, this fever ran its course practically by the twenty-eighth day, and convalescence was entered upon, the temperature was daily above the normal, until November 1st, when the patient was allowed to sit up for the first time.

Typho-malarial Fever.—Of late years the term typho-malarial has quite frequently appeared in our mortality reports, but I think for the most part without scientific propriety.

This term has been applied generally, by our physicians, to all the cases of continued fever, because they were recognized as not being typhoid, and were not looked upon as remittents. There was, indeed, no other name in the current medical nomenclature to apply to them, with any semblance of propriety. These cases I have always designated as malarial continued. As regards the term *typho-malarial*, I see no objection to its use, provided it is applied as its originator proposed.

From communications in the journals, it would appear that much confusion exists in the mind of writers, as to the correct meaning of this term. By many it is used to designate a fever which they regard as malarial, but in which the patient has lapsed into a typhoid state—the so-called remittents with adynamic tendencies—though there exist none of the abdominal features of enteric fever.

Some perhaps regard this term as applicable to a special type of fever. Others of my acquaintance are quite at a loss as to the meaning of the term, and doubt its applicability to any form of fever.

At the meeting of the International Medical Congress, in Philadelphia, in 1876. Dr. J. J. Woodward presented a paper entitled “Typho-malarial Fever: is it a special type of fever?” He declared that the term typho-malarial was proposed, not to represent a specific type of fever, but “to

designate all the many-faced brood of hybrid forms resulting from the combined influences of the causes of malarial fever and enteric fever."

The Section on Medicine adopted this conclusion: "Typho-malarial fever is not a special or distinct type of disease, but the term may conveniently be applied to the compound forms of fever, which result from the combined influence of the causes of the malarial fevers, and of typhoid fever."

Having this for our authority, it may be declared that, before applying the term typho-malarial to any given case of fever, we must have satisfactory evidence of the operation of two causes, one which gives rise to malarial fevers, the other which produces typhoid or enteric fever.

Inasmuch as we do not look for specific pathological lesions in malarial fevers, our main reliance in the diagnosis of them must be in their thermometric range, and the study of this range has been one of the chief objects of the present paper.

All the world agrees that there is no reliable evidence of the operation of the typhoid poison, except inflammation, with enlargement and ulceration of the solitary and agminated glands of the small intestine, and enlargement of the mesenteric glands. The full requirements, therefore, for a diagnosis of typho-malarial fever are a thermometric range presenting the combined peculiarities of the malarial fevers and of typhoid fever, together with the gastric and hepatic symptoms of the former, and the intestinal lesions of the latter.

I have read Dr. Woodward's paper with profound respect, and I admire the fairness and the scientific accuracy which he has displayed in the discussion of this interesting subject. In this paper before the International Congress, he declares that the fevers observed in the Federal Army, to which he proposed to apply the term typho-malarial, were divisible into two groups. In the first group the type resembled very closely ordinary typhoid fever. The cases began, continued, and ended like typhoid, and at death presented the characteristic lesions of the patches of Peyer. But in many respects they were unlike typhoid. The thermometric range was different. The daily evening exacerbations observed in typhoid were exaggerated, and often assumed a tertian or double tertian type.

In the beginning of the attack it was common to find the gastric and hepatic disturbances so characteristic of remittent fever; and in convalescence the ordinary ague paroxysms often appeared. In the second group—

"in which the malarial phenomena predominated, the disease began as a simple intermittent or remittent fever of quotidian, tertian, or quartan type, the most frequent form being a simple or double tertian; but after a week or ten days, the fever assumed a more or less completely continued type, with many of the phenomena characteristic of typhoid fever, such as diarrhœa, abdominal tenderness, meteorism, muttering delirium, dry, brown tongue, and the like. But even when the typhoid phenomena were most pronounced, some of the most characteristic of them were often wanting. Thus sometimes there was no diar-

rhœa at all but constipation instead. The rose-coloured eruption was generally entirely absent; gastric disturbance, hepatic tenderness, and an icteroid hue of countenance were more generally present than in simple typhoid fever.

The pathological lesions to which we must now look for deciding the true nature of the cases constituting this group, will be conveniently classed under two heads.

Dr. Woodward says—

“I have collected a number of autopsies of cases of this kind, in which diarrhœa had been present during the fever, and in which after it had assumed a continuous type, it had strikingly resembled typhoid fever, but in which dissection showed no other lesion in the alimentary canal than a smart intestinal catarrh.”

These cases do not come up to the requirements laid down by us, and I would say therefore were clearly not typho-malarial, for there is no evidence whatever of the operation of the typhoid poison in them. They were, to my mind, probably cases of malarial fever of the continued form, in which the patient lapsed into a typhoid condition, as he might have done in erysipelas, dysentery, puerperal peritonitis, or other disease.

But mark well, the lesions found in most of the cases of this group were—

“patches of inflammation scattered irregularly throughout both small and large intestines, and enlargement of the closed glands. The solitary glands of the small intestine appeared as projecting tumours the size of pin-heads, which often had constricted necks so that they resembled tiny polypi. The agminated glands of Peyer, slightly prominent, were often the seat of pigment deposit, which gave them the so-called shaven-beard appearance.

“Between the simple inflammatory enlargement of the closed glands, which I have pictured, and the more luxuriant process which occurs in ordinary typhoid, and which most pathologists believe to be specific, every possible transition existed.

“I, for one, confess myself unable to draw a line between the two conditions. Anatomically, they appear to pass into each other by insensible gradations. The sloughing and ulceration of the so-called typhous process is, I think, sufficiently well explained by the intensity of the process, and the nutritive disturbances which thence result, without conjuring up in our imagination an undemonstrated specific something to account for it.”

This view seems to me entirely correct. These cases were properly designated typho-malarial.

The so-called typhous process is now recognized by other pathologists besides Dr. Woodward, as simply an acute inflammation, devoid of specificity, of the solitary and agminate glands of the small intestine, and of the glands of the mesentery.

The matter with which these glands are big is composed of cells, white blood-corpuscles which, according to Cohnheim's view of the inflammatory process, have migrated from the small veins; and others resulting from proliferation of the peculiar cells which constitute the parenchyma of the glands. For a full account of the histological changes in the inflamed intestines I refer to “Med. and Surg. Hist. of the War of the Rebellion,” Med. Vol. Part Second; to Dr. John Harley's article on Typhoid Fever in Reynolds's “System of Medicine;” and to Liebermeister's article in Ziemss-

sen's "Cyclopædia." According to Dr. Harley's observations which were made in King's College and the London Fever Hospital, in rare cases of typhoid the solitary glands alone are affected. In the extensive autopsical investigations made at Basle, by Hoffman, in conjunction with Liebermeister, it was established that in some of the cases the pathological processes did not go beyond the stage of simple swelling of the solitary and Peyer's glands. There was no ulceration or loss of tissue. The patches and follicles returned to their normal condition through the influence of degeneration and absorption. Numerous little ecchymoses were found, oftentimes producing a punctate pigmentation of the swollen patches—the shaven-beard appearance of Woodward. (Ziemssen's "Cyclopædia," vol. i. p. 102.) Hoffman found that the glandular enlargement was "produced essentially by an excessive development and multiplication of the cellular elements."

This hybrid disease which Dr. Woodward has brought so graphically before us is, however, not a new one. He himself has shown that it was the scourge which, under the names of Hungarian Fever and Walcheren Fever, decimated the armies of Europe, during the sixteenth and eighteenth centuries. Trousseau, the great clinical teacher of the Hôtel Dieu, has graphically described one of these compound forms of fever, and tells us that "it is particularly in districts where marsh fevers are endemic, and in persons who have not long been absent from such localities, that we see them." Among the ancients who observed and drew clinical pictures of the forms of disease we are discussing, were (I quote from Trousseau) Sydenham, Morton, Huxham, Van Swieten, and Stoll. Dr. Drake, in the "Diseases of the Interior Valley," has given an account of these hybrids, and proposed to designate them by the term *remitto-typhous*; and Professor Dickson of Philadelphia clearly recognized them, so that there can be no doubt of their entity, or of the truth of the clinical picture which has been presented to you.

What can possibly be more explicit than this from Bartlett, p. 133:—

"Typhoid fever, like all other continued affections, is sometimes more or less mixed up with and influenced by the pathological element of periodicity. Dr. Wooten, of Lowndesboro, Alabama, in a letter to me, says: I may remark that I have often seen typhoid fever complicated with regular remittance—that is typhoid fever and remittent fever existing together; and I have cured the paroxysmal exacerbations whilst the disease essential to typhoid continued; and I have frequently found it necessary to do this before the more formidable disease could be influenced by remedies."

In regard to the general question of hybridity as applied to diseases, there can at this day be no doubt. The disease called by the Germans, *Rötheln*, is clearly a compound resulting from the poisons of scarlatina and measles. The poisons of typhus and typhoid occasionally combine to give us another hybrid.

"It cannot be questioned that cases of fever are met with from time to time, though unfrequently, in which the phenomena of both forms of disease are pre-

sent in the individual. In a paper on the coexistence of several morbid poisons, in the 24th vol. *Medico-Chirurgical Review*, Dr. Murchison gives several most illustrative cases of this hybrid disease."

Sir D. Corrigan gives an admirable example in the tenth lecture of his work on Fever. (Hudson on "Fever," p. 65.)

Thirdly, the existence of a hybrid between typhoid and malarial has been conclusively settled by Dr. Woodward's researches. But although such forms of disease exist, it should be remembered that, in civil practice at least, they are very rare.

Thus Hudson says of the compound of typhus and typhoid, "that while the occasional occurrence of a hybrid disease is unquestioned, this is so infrequent and exceptional as really to prove the rule." And Dr. Woodward remarks, "that, whenever an army, recruited in a comparatively non-malarial region, campaigns on a malarial soil, such hybrid forms will appear; and that, sporadically, such cases will appear in civil practice in miasmatic regions."

Appealing to my own observation, I can furnish but a single case of typho-malarial, and, as this was studied with care, its history and thermometric range are herewith presented as illustrating all the clinical points in a typical case.

CASE XI. *Typho-Malarial Fever*. (Chart 11.)—Mrs. B., æt. 25 years, was attacked, October 2d, with fever introduced by chill, and accompanied with nausea, and vomiting of bile, and diarrhœa. Bilious vomiting and purging continued to such an extent that morphia, hypodermically, was required to control it. As the stomach was still very irritable, on 5th October an attempt was made to administer quinia by the rectum, but after three injections it was abandoned, because it was not retained.

On the fifth day of her illness, the fever having continued with regular evening exacerbations and morning remissions, almost complete deferescence occurred, and I believed, then, my diagnosis of bilious remittent confirmed.

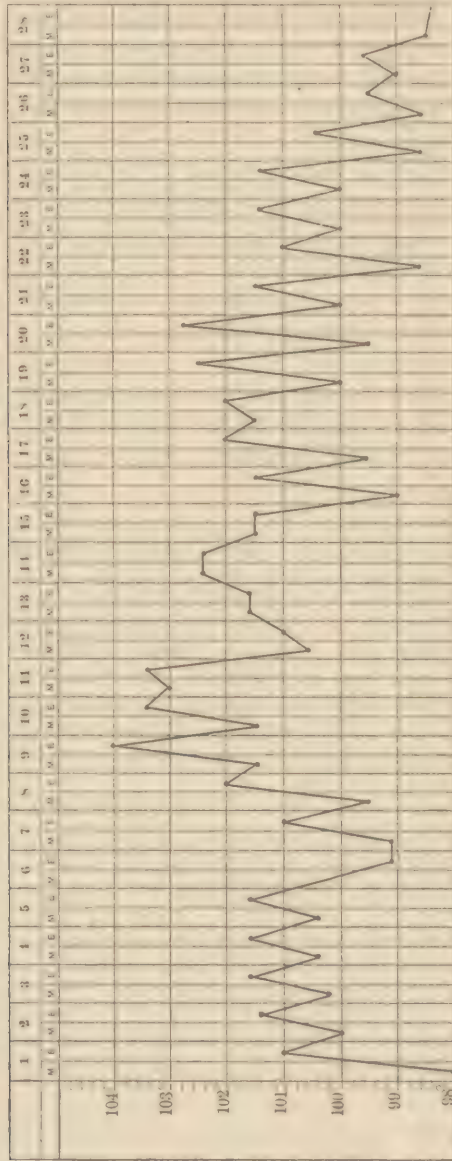
On the sixth and seventh days she was comfortable, and the temperature did not go above $99\frac{1}{2}^{\circ}$; but, on the evening of the seventh, though she had kept her bed, and had taken nothing but liquid food, and had been guilty of no imprudence, the temperature rose, and vomiting of bile and diarrhœa returned.

On the eighth day the temperature rose still higher, and on the ninth it reached 104° . It did not go much below this until the twelfth, which was five days since the reaccession of fever. On that day an abrupt fall to $100\frac{1}{2}^{\circ}$ occurred, without assignable cause. From this it again rose, pursued a comparatively continuous course for several days, and then went on in the zigzag lines which are observed during the last days of typhoid.

In this history we observe the gastric and hepatic symptoms of bilious remittent; and a thermometric range which presents, first, the typical features of a bilious remittent terminating on the fifth day; a lull; and then another curve, marked by tendency to subside on the fifth day also, and finally the range of typhoid fever; covering in all twenty-eight days.

In addition to these features well-marked typhoid symptoms made their appearance early. There were deafness and dulness of mind, with the typhoid facies: great dryness of the mouth, throat, and nares, and fre-

Chart 11.



quent epistaxis; a rapid feeble pulse demanding stimulants, which is an exceedingly rare occurrence in malarial continued fever, in my observation. The pulse ranged from 110 to 130 per minute. There were meteor-

ism, ileo-caecal tenderness and gurgling, troublesome diarrhoea, and a copious eruption of rose-coloured lenticular spots over the abdomen.

The rose-coloured spots were observed for the first time on the thirteenth day of fever, about twenty in number; they came out in successive crops until the approach of convalescence.

On the eighteenth day of fever the urine was slightly albuminous, and continued so for several days. Bronchial cough was a troublesome symptom. Fever left her on the twenty-eighth day, and convalescence was uninterrupted.

After the trial with quinia no medicine of any kind was administered, except occasionally a very small dose of morphia, hypodermically, at night, to allay restlessness and procure sleep.

I have said that this is the only case of typho-malarial which has come under my observation. It is certainly the only one I have recognized.

It should be remembered, however, that my field of observation has been one in which the typhoid poison has not been operative, to any marked extent, until within the past year. In the future it is possible that the blending of the two types may be more frequently observed here; but my impression is, that typho-malarial fever will possess its chief interest for the military surgeon, and will be seen, to a limited extent only, in civil practice.

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